Churchill County Utilities Water Conservation Plan Update

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Overview

The Board of County Commissioners of Churchill County approved the Churchill County Water Conservation Plan Update on August 21, 2019 after it was submitted to and approved by the Division of Water Resources (DWR) on July 22, 2019 pursuant to NRS 540.131. Pursuant to NRS 540.134.4(c) the Water Conservation Plan must be updated every 5 years. This Plan updates the Plan approved in 2014 with the next planned update scheduled for 2024.

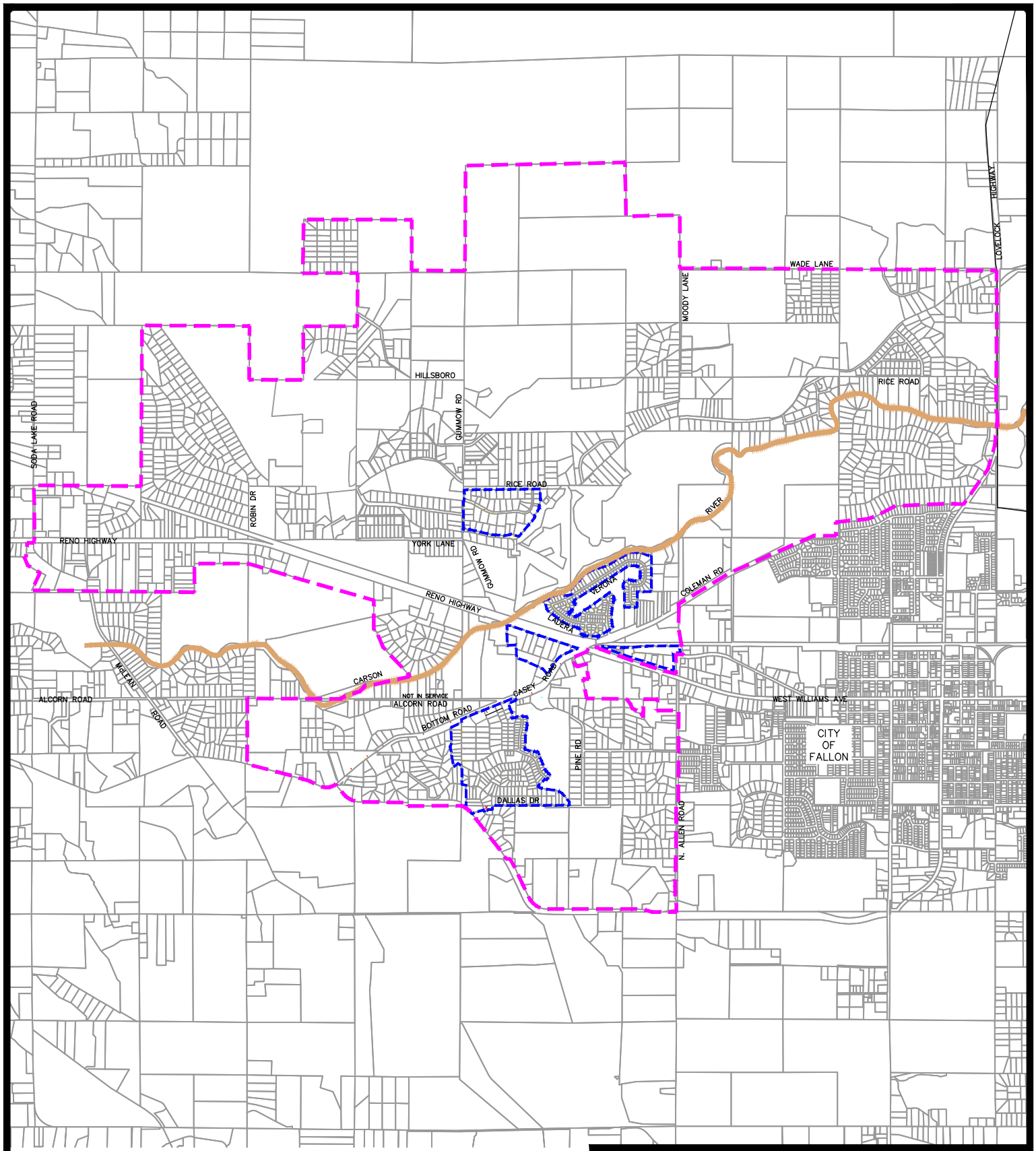
The purpose of this Plan is to document current conservation efforts and provide a strategy for future water saving measures and incentives. This Plan is mandated by Nevada Revised Statute (NRS) 540.131 and is compliant with NRS 540.121 through 540.151. The Water Conservation Plan will be posted on the County web page http://www.churchillcounty.org/index.aspx?nid=565 and copies are also available in the Planning Department in the County Administration offices at **155 N Taylor South, Suite 194, Fallon, NV 89406**.

Background

In August 2006, Churchill County became responsible for taking over the operation, maintenance, and administration of the Pine Grove Water System which had been County owned, but operated and maintained by another entity since 1994. In October 2007, the Pine Grove Water System was replaced by a County owned and operated municipal system. Currently, there are approximately 275 connections served including three mobile home parks (Oasis, West Star and Casey Road mobile home parks) and several commercial accounts. Buildout conditions of the entire planned service area projects 8,005 residential and multifamily customers in addition to 424 acres of developable commercial property. Figure 1 illustrates the location of the existing water systems and the planned service area. The County contracts the operation and maintenance of the water system to SPB Utility Services. The system currently delivers, on average, approximately 132,000 gallons per day (GPD), or approximately 48.3 million gallons per year (148 acre feet annually).

Introduction

In the arid Western U.S., water is a scarce resource necessary not only for the well-being of a community's inhabitants, but also for the ecologic and economic vitality of a region. Nevada, and of interest to this plan, Churchill County, is characterized as a high desert environment that is in a constant state of drought, intermixed with brief periods of wet conditions. Such conditions imply efficient water use is not a concept that applies only during dry times, but is rather a way of life in Northern Nevada



LEGEND

PLANNED UTILITY SERVICE AREA

EXISTING WATER UTILITY AREA

Churchill County
Water Conservation Plan

Figure 1
Utility Service Area

Physical Setting

Churchill County is located approximately 60 miles east of Reno and 30 miles east of the City of Fernley. The majority of the population within Churchill County lives within the Carson Desert Hydrographic Basin (Basin 101) and the Churchill Valley Hydrographic Basin (Basin 102) as shown in Figure 2.

Climate

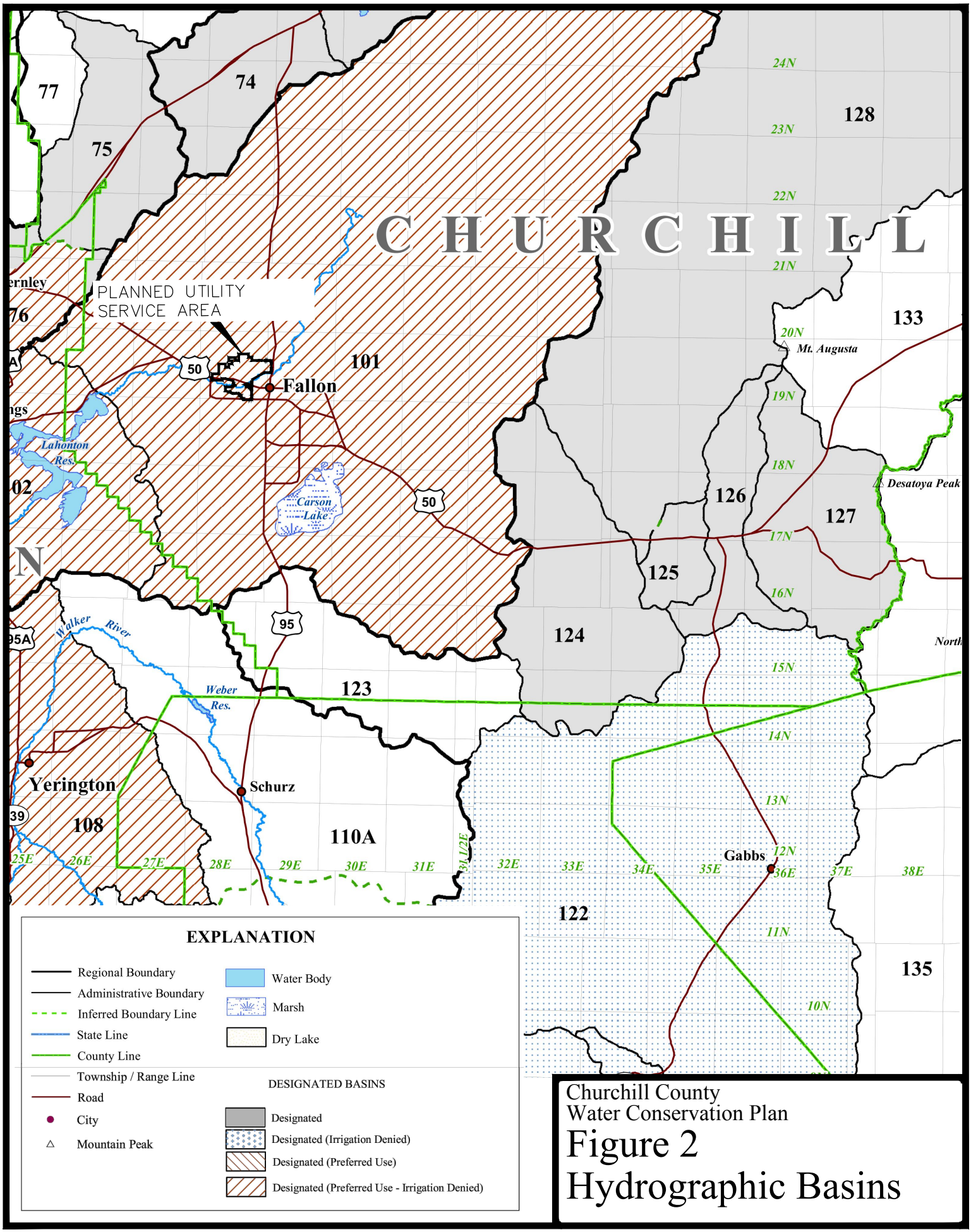
Churchill County experiences a high desert climate with hot summers, cold winters, and an average annual precipitation of less than 5 inches. Average temperatures: summer 85 degrees; winter 39 degrees; and an average diurnal temperature variation of about 35 degrees.

Water Resources and Allotment

Churchill County adopted a Water Resources Plan in 2000 and completed an update in 2007. The Water Resources Plan identifies all potential water sources and water rights owned by Churchill County. The plan is available on the Churchill County web page, in the Planning Department section: http://www.churchillcounty.org/index.aspx?nid=565. Churchill County owns a total of 5,775 acre feet annual (AFA) of underground water rights. The total duty of Churchill County owned underground water rights associated with the Sand Creek Well is 762 AFA and for the Pine Grove Wells 1 and 2 is 87.2 AFA each. Churchill County also owns a significant quantity of surface water rights and continues to accumulate surface water rights for recharge and potential future surface water treatment through various programs.

Source Water Protection

A Community Source Water Protection Plan was adopted by the Churchill County Commissioners in December, 2015 (2015 CSWPP). The purpose of the 2015 CSWPP is to provide a framework for the long term protection of the public drinking water supply sources which includes 1) developing a plan to ensure the availability of clean drinking water for future generations, 2) encourages water resource protection measures to promote sustainable economic growth, 3) increases community awareness of the source of the drinking water supply and how the public can help protect it and 4) to promote collaboration and communication amongst all effected entities. The plan is available on the Churchill County web page, in the Planning Department section: http://www.churchillcounty.org/index.aspx?nid=565.



Churchill County
Water Conservation Plan

Figure 2
Hydrographic Basins

Existing Water Utility System

In 2019, Churchill County completed a Water Master Plan (2019 WMP) which identified existing and projected water customers and corresponding water use, the condition and capacity of the existing water system and recommended improvements. The 2019 WMP is available on the Churchill County web page in the Water and Wastewater Department section: http://www.churchillcounty.org/index.aspx?nid=153.

The Churchill County water system locations are illustrated in Figure 1, page 2. The water system in comprised of wells, a water treatment plant, storage, pumping and distribution. The primary production well is the 395 foot deep Sand Creek well capable of pumping upwards of approximately 1,000 gallons per minute (GPM). A 750 GPM water treatment facility lowers manganese and arsenic to comply with federal drinking water standards. A 1.0 million gallon (MG) treated water storage tank, 950 GPM booster pump station (3 pumps) and a 3,700 GPM fire pump (1 pump) provides potable water to the distribution system for typical municipal uses including fire protection. The water distribution system is comprised of approximately 45,000 lineal feet of water mains ranging in size from 6 inches to 12 inches. All services are metered and a tiered meter rate was codified under Churchill County Code (CCC) 13.04.300 to encourage conservation.

The 2019 WMP identified that the historical annual average day usage varied over the past 6 years from 479 GPD/customer to 520 GPD/customer and averaged 497 gallons per day per customer. Customer and system usage history is contained in the 2019 WMP. Unusual or unaccounted for use could show a problem with a meter. If a customer has unusual water use for their property, a report is run to gather information from the meter which could show if there is a leak. If there are any suspected problems with a meter or transponder, it will be replaced. Meters have been, and will continue to be, tested periodically to ensure accuracy and the County will maintain water pumping and consumption records for the water system.

Unaccounted for water in the Churchill County system has varied from a low of 3.3% to a high of 12% when system wide flushing was undertaken. Unaccounted for water is water that is lost in the system for such items as firefighting, system leaks and breaks, illegal connections, and generally any other unknown and unmetered water use. A common acceptable standard for unaccounted for water is less than 10%.

Conservation

Conservation incentives are measures that increase awareness and encourage conservation. The County has long supported water conservation practices due to the desert environment and the reliance upon surface water inflow from the Carson River and the Newlands Project which is the primary source of groundwater recharge. County building codes require low flow fixtures, providing for standards for new development as well as current properties; the landscape ordinance encourages use of desert tolerant plants and promotes xeriscaping (CCC16.16.020.4) (*See Appendix A*). Water conservation measures are supported through the following County Ordinance (also refer to Appendix A for specific wording):

- CCC 13.04.190. Wasting of water is prohibited.
- CCC 13.04.200. Allows for watering schedules and off peak watering.
- CCC 13.04.280. Requires water meters for all service connections.
- CCC 13.04.300. Identifies the tiered rate structure to promote the conservation of water, including without limitation, an estimate of the manner in which the tiered rate structure will impact the consumptive use of water.
- CCC 13.04.520: Allows prosecution for the illegal use of water.
- CCC 14.12.030. Adopts the International Plumbing Codes that requires water efficient building plumbing systems. This, among other things, provides standards for water efficiency for new development
- CCC 16.16.020. Encourages use of desert tolerant plants and promotes xeriscaping.
- CCC 16.16.010.9. Requires distribution system pressures to be less than 100 psi

In addition. The following programs also promote and support water conservation efforts;

- Flow meters are equipped with transponders that records current meter history and a report can be run that will show possible leaks on a property such as a continuous slow flow from a toilet, sink, etc.,
- Flow meters are tested periodically to ensure accuracy.
- Tracking customer water usage to identify trends in water use and the effectiveness of water conservation measures.
- Encourage reuse of treated effluent from County Water Reclamation Facility,
- Support of Truckee Carson Irrigation District (TCID) and agricultural efficiency programs,
- Continued tracking of unaccounted for water and minimizing unaccounted for water,
- Periodic review of conservation program effectiveness, and
- Support of water conservation education through:
  - Funding of the Churchill County Museum's water conservation exhibits,
  - Support of the Newlands Water Protection Association
  - Billing inserts promoting conservation during warmer months are included in monthly bills encouraging customers to be mindful of where and how their water is being used,
  - Public school outreach,
  - Educational outreach through various organizations such as Future Farmers of America, Conservation Districts, and Cooperative Extension

Water Resource Planning and Conservation

Effective water resources protection and planning is essential to the long-term sustainability of the community. To this end the County has implemented several measures, including adoption of water resource protection policies in the 2015 County Master Plan (Goal PSF 2 & Goal CNR 2), the County Water Resource Plan to ensure continued recharge to the aquifers and protection of vital resources and the County Water Master Plan to track customer water usage, unaccounted for water losses and to maintain efficient water distribution systems.

The County has in the past and will continue in the future to work closely with the Carson Water Subconservancy District (CWSD), United States Geological Survey (USGS), United States Fish and Wildlife Services, Truckee-Carson Irrigation District (TCID), the State Engineer's office, legislators and others in support of any measures that support water conservation and in further studying and understanding water conservation measures, available water inventories and water table trends, particularly as it relates to Basins 101 and 102.

Water Shortage Contingency Plan

The majority of Churchill County's residents live in the Carson Desert Hydro-basin 101, or the Churchill Valley Hydro-basin 102. Ninety-eight percent of Basin 101's recharge comes from infiltration of waters from the Carson and Truckee Rivers through the Truckee Carson Irrigation District canal system. Therefore sustainment of their flows and of existing decrees and agreements is vital to water storage, recharge and contingency planning in Churchill County.

In addition, land and water conservation programs and support for agriculture, wetlands and improved agricultural practices creates and sustains recharge and storage.

Existing water right dedication requirements for all development ensures an appropriate drought reserve or contingency buffer.

Use of Effluent Water

As Churchill County's population grows, the use of reclaimed wastewater is essential to reduce the demand for groundwater. Currently, Churchill County has a discharge permit for the Moody Lane Water Reclamation Facility to discharge tertiary treated effluent to the Soda Lake Drain—this is "counted/credited" as water to the Stillwater Wildlife Refuge.

Drought Response Plan

Under normal circumstances Churchill County does not need drought reserves as the water source and allotment are adequate. However, if a drought situation is identified, Churchill County customers are expected to take additional action to reduce their water use. The objective of the plan would be to manage the available resources to ensure continued supply of potable water during periods of drought or extended drought.

It is envisioned that voluntary conservation will be sufficient to ensure an adequate supply of water and reduce water usage. However, if a sustained drought (lack of precipitation) is encountered, it may be necessary to implement mandatory restrictions in order to ensure an adequate supply of water to meet essential needs.

Churchill County plans for three stages of drought response as follows: 1-Warning Stage, 2 - Alert Stage, and 3 - Emergency Stage.

Stages 1, 2 and 3 shall correspond to the U.S. Drought Monitor (www/droughtmonitor.unl.edu/) intensity categories D1 (Moderate Drought), D2 (Severe Drought) and D3 (Extreme Drought) respectively.

The stages are describes as follows:

Stage 1 – Warning Stage (U.S. Drought Monitor Intensity D1-Moderate)

In Stage 1, the warning stage, Churchill County would increase monitoring of its water supplies and would begin creating public awareness of the water supply situation and the need to conserve. Conservation measures at this stage would be voluntary.

Churchill County would perform the following functions;

1. Increase monitoring of water supplies.

2. Begin creating public awareness of the water supply situation and the need to conserve.

3. Inform customers of voluntary conservation measures (non-essential water uses) as listed below.

    a. Use of water through broken or defective plumbing, sprinkler, watering or irrigation systems.

    b. Use of water which results in flooding or run-off in gutters, waterways, patios, driveway, or streets.

    c. Use of water for washing aircraft, cars, buses, boats, trailers or other vehicles without a positive shut-off nozzle on the outlet end of the hose. Exceptions include washing vehicles at commercial or fleet vehicle washing facilities operated at fixed locations where equipment using water is properly maintained to avoid wasteful use.

    d. Use of water through a hose for washing buildings, structures, sidewalks, walkways, driveways, patios, parking lots, tennis courts, or other hard-surfaced areas in a manner which results in excessive run-off or waste.

    e. Use of water for watering streets with trucks, except for initial wash-down for construction purposes (if street sweeping is not feasible), or to protect the health and safety of the public.

    f. Use of water for construction purposes, such as consolidation of backfill, dust control, or other uses unless no other source of water or other method can be used.

    g. Use of water for more than minimal landscaping in connection with any new construction.

    h. Use of water for watering outside plants and turf areas using a hand-held hose without a positive shut-off valve.

    i. Use of water for decorative fountains or the filling or topping off of decorative lakes or ponds. Exceptions are made for those decorative fountains, lakes, or ponds which utilize recycled water.

j. Use of water for the filling or refilling of swimming pools.
k. Service of water by any restaurant except upon the request of the patron.

Stage 2 – Alert Stage (U.S. Drought Monitor Intensity D2-Severe)

In Stage 2, the alert stage, Churchill County would call for wide-based community support to achieve conservation, limit the use of fire hydrants to fire protection uses (by requiring effluent for construction and dust control purposes if possible), implement water use restrictions, and impose penalties for ignoring the restrictions. Conservation measures at this stage would be mandatory and violations would incur fines.

Churchill County would perform the following functions;

1. Set conservation goals and call for wide-based community support to achieve those goals.
2. Inform customers of mandatory conservation measures (non-essential water uses, listed in Stage 1 are now mandatory).
3. Inform customers of penalties if mandatory conservation measures are not observed as follows;

   1st violation – Written warning.
   2nd violation – $100.00
   3rd violation – Turn-off of water services.

4. Inform customers of mandatory conservation water fees.
5. Limit the use of fire hydrants to fire protection uses only.
6. Use of water for outside plants, lawn, landscape, and turf areas will only be permitted two days a week.

Offenses for separate water use restriction violations will each start at the warning stage (1st violation) and the penalties for the offenses are in addition to the regular rate schedule charges.

Stage 2 water rates would be 2 times the normal quantity rate, or as deemed necessary.

In lieu of turning a water service off in the case of a 3rd violation, a flow restrictor could be installed at Churchill County's sole discretion. The flow restrictor shall not restrict water delivery by greater than 50% of normal. The flow restrictor may be removed only by Churchill County and only after a 30-day period has elapsed and only upon payment of the $75.00 removal charge.

If, after the removal of the flow restrictor, any non-essential or unauthorized use of water shall continue, another flow restrictor may be installed and shall remain in place until water supply conditions warrant its removal and the appropriate charge for removal has been paid.

Stage 3 – Emergency Stage (U.S. Drought Monitor Intensity D3-Extreme)

In Stage 3, the emergency stage, Churchill County would declare a drought and water shortage emergency, would enforce water use restrictions, impose fines for violations, and impose higher fees for water usage. Media relations would be activated in order to inform the customers and monetary assistance may need to be secured in an effort to mitigate the effects of the drought (e.g. federal funding assistance). Conservation measures at this stage would be mandatory and over-use would be penalized by higher rates.

When a drought is declared over, voluntary conservation measures (see Stage 1 section) will be reinstated and water supplies would continue to be monitored.

Churchill County would perform the following functions;

1. Declare a drought and water shortage emergency and use media relations to supplement efforts to keep customers informed.
2. Set rationing benchmarks for each customer class.
3. Inform customers of prohibited water uses (non-essential water uses, listed in Stage 1 are now prohibited).
4. Inform customers of penalties if prohibited measures are not observed as follows;

   1st violation – Written warning.
   2nd violation – $100.00
   3rd violation – Turn-off of water services.

5. Inform customers of rationing water fees.
6. Limit the use of fire hydrants to fire protection uses only.
7. Prohibit outdoor watering.
8. Seek monetary assistance in an effort to mitigate the drought (e.g. federal funding).

Offenses for separate water use restriction violations will each start at the warning stage (1st violation) and the penalties for the offenses are in addition to the regular rate schedule charges.

Stage 3 water rates would be 3 times the normal quantity rate, or as deemed necessary.

In lieu of turning a water service off in the case of a 3rd violation, a flow restrictor could be installed at Churchill County's sole discretion. The flow restrictor shall not restrict water delivery by greater than 50% of normal. The flow restrictor may be removed only by Churchill County and only after a 30-day period has elapsed and only upon payment of the $75.00 removal charge.

If, after the removal of the flow restrictor, any non-essential or unauthorized use of water shall continue, another flow restrictor may be installed and shall remain in place until water supply conditions warrant its removal and the appropriate charge for removal has been paid.

If any customer seeks a variance from the provisions of Stage 3, then that customer shall notify Churchill County in writing, explaining in full detail the reason for such a variation. Churchill County shall respond to each such request.

Conservation Estimates

During the Stage 1 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 5-10% reduction in water consumption.

During the Stage 2 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 10-15% reduction in water consumption.

During the Stage 3 phase of the conservation plan, it is estimated that conservation measures could be expected to provide a 15-30% reduction in water consumption.

Educational Materials to Promote Conservation

Landscape guides are useful to water customers who need information regarding water friendly landscapes. There are excellent landscape guides available online which are well suited to the Churchill County area. One guide created by Truckee Meadows Water Authority (TMWA), can be found at: http://www.tmwalandscapeguide.com/landscape_guide/interactive/index.php.

Further information can be found on the following sites:

Water
- http://www.awwa.org/
- http://www.unce.unr.edu/

Drought
- http://drought.unl.edu/
- http://www.usda.gov/wps/portal/usda/usdahome?navid=DISASTER_ASSISTANCE

Landscape
- http://www.usda.gov/wps/portal/usda/usdahome
- http://www.tmwalandscapeguide.com/landscape_guide/interactive/index.php
- http://www.unce.unr.edu/publications/files/nr/2006/eb0601.pdf

Education
- www.wateruseitwisely.com
- www.washoeet.dri.edu/
- http://environment.nationalgeographic.com/environment/freshwater/water-conservation-tips/
- http://water.epa.gov/polwaste/nps/chap3.cfm

Institutional
- www.lvvwd.com
- www.snwa.com
- http://www.washoecounty.us/water

http://tmwa.com/
http://phoenix.gov/waterservices/index.html
http://www.water.ca.gov/

Public Notice

As required by NRS 540.131, the updated Water Conversation Plan was presented to the Board of County Commissioners at their August 21, 2019 meeting. The Plan was made available to the public for inspection and comment on the County web page from July 31 to August 21, 2019, in the Planning Department office, and at the County Library. During that time, no written comments were received**.**

APPENDIX A-EXCERPTS FROM APPLICABLE COUNTY ORDINANCES

13.04.190: WASTING WATER:

No customer shall knowingly permit leaks or waste of water. Where water is wastefully or negligently used on a customer's premises, or is flowing onto adjacent properties, roads, or drainage ditches, seriously affecting the general service or operation of the system, the county may discontinue the service if such conditions are not corrected within five (5) days after giving the customer written notice.

13.04.200: REGULATION OF WATER USAGE:

The county may from time to time require that a watering schedule be followed or use of water be restricted or provide incentives for off peak time watering by notice to each customer. Failure to follow the required watering schedule or imposed restriction will result in a fine of one hundred dollars ($100.00) per occurrence. (Bill 2014-A, 2014)

13.04.280: METERS:

All new services shall have meters and will be billed according to the appropriate metered rate schedule.

13.04.300: RATES AND CHARGES FOR DOMESTIC, COMMERCIAL, INDUSTRIAL, AND IRRIGATION SERVICE:

A. Schedule A: This schedule applies to all metered residential or irrigation services. Service sizes three-fourths inch ($^3/_4$") and one inch (1") are considered small domestic (residential) services and service sizes one and one-half inches ($1^1/_2$") and above are considered large domestic services. Services not listed in the following table shall be charged the monthly customer service charge of the next larger service size.

    1. Small Domestic (Residential) Water Usage Charge: A monthly base rate charge of forty-five dollars ($45.00) per month plus a water use charge per month. Monthly water use charge:

        $2.10 per 1,000 gallons of water used each month between 0 gallons and 6,000 gallons

        $2.60 per 1,000 gallons of water used each month between 6,000 gallons and 20,000 gallons

        $3.15 per 1,000 gallons of water used each month for more than 20,000 gallons

2. Large Domestic Water Usage Charges:

Meter Size	Meter Charge Per Month	Water Use Charge Per Month
1.5	$67.50	Same as small domestic customer
2.0	$105.00	
3.0	$220.00	
4.0	$320.00	
6.0	$640.00	

Large multi-residential domestic customers will pay the monthly meter charge, a service charge of thirty-four dollars ($34.00) per month per unit served, and a water use charge per month that is the same as a small domestic customer.

Water user rates for large and small domestic users shall be reviewed periodically to ensure rates provide sufficient revenues for operating, maintenance, administration, and replacement expenditures associated with County owned water operations.

B. Schedule B: This schedule applies to all metered commercial and industrial services under County jurisdiction after the effective date hereof. The monthly customer service charge depends on service size. Service sizes three-fourths inch ($^3/_4$") and one inch (1") are considered small commercial and industrial services and service sizes one and one-half inches ($1^1/_2$") and above are considered large commercial and industrial services. Service sizes not listed shall be charged the monthly customer service charge of the next larger service size.

1. Small Commercial And Industrial Water Usage Charge: A monthly base rate of sixty-seven dollars ($67.00) per month plus a water use charge per month based upon the following schedule:

2. Water use charge:

$2.10 per 1,000 gallons of water used each month between 0 and 6,000 gallons

$2.60 per 1,000 gallons of water used each month between 6,000 and 20,000 gallons

$3.15 per 1,000 gallons of water used each month for more than 20,000 gallons

3. Large Commercial and Industrial Water Usage Charge:

Meter Size	Meter Charge Per Month	Water Use Charge Per Month - All Meter Sizes
1.5	$67 .50	$0.0025 per gallon used each month between 0-20,000 gallons
2.0	$105.00	$0.0030 per gallon used each month between 20,000-40,000 gallons
3.0	$220.00	$0.0035 per gallon used each month between 40,000-60,000 gallons
4.0	$320.00	$0.0040 per gallon used each month for more than 60,000 gallons
6.0 or larger	$640.00	

Large commercial and industrial customers will pay the meter charge and monthly water use charge.

13.04.520: PROSECUTION FOR ILLEGAL USE OF WATER:

Any person who wrongfully and maliciously appropriates or uses county water, or wrongfully and maliciously interferes with any officer, agent, or employee of the county in the proper discharge of their duties shall be guilty of a misdemeanor and shall be fined in any sum not exceeding two thousand dollars ($2,000.00) or imprisoned not to exceed ninety (90) days in the county jail, or by both such fine and imprisonment; provided further, that the county damaged by any such act may also bring civil action for damages sustained by any such act, and in such proceeding the prevailing party shall also be entitled to attorney fees and costs of court. (Bill 2014-A, 2014)

16.16.020.4: LANDSCAPE REQUIREMENTS:

A. Purpose: The purpose of this section is to establish standards for the placement, amount and type of landscape materials and other buffers installed in order to:

1. Enhance the aesthetics of the community;

2. Encourage the use of xeriscape and hardscape, where appropriate, in order to conserve water resources;

3. Provide environmental enhancements such as, but not limited to, the reduction of noise, dust and erosion;

4. Reduce visual pollution which might otherwise occur within an urbanized area; and

5. Establish a greater sense of privacy from visual and physical intrusion.

B. Requirements:

1. Determination Of Permit Issuance: No building permit shall be issued to erect, construct, or expand any commercial, industrial or multi-family structure, as well as manufactured/mobile home parks and recreational vehicle parks, unless the planning department first determines that landscaping, as required by this section, should be installed. Landscape plans shall be incorporated into the building permit process and fee schedule. Landscaping plans for common areas and entrances to subdivisions and planned unit developments will be incorporated into the tentative and final plans and will be reviewed as part of the complete package.

2. Preliminary Plan: A preliminary landscape plan shall be filed with the planning department for the following:

a. Any new commercial, industrial or multi-family structure, as well as manufactured/mobile home parks and recreational vehicle parks;

b. Any expansion of an existing commercial, industrial or multi-family structure, as well as manufactured/mobile home parks and recreational vehicle parks, unless exempted under subsection B11 of this section.

3. Buffers: Any uses abutting a residentially zoned or used lot shall provide adequate buffering along all common property lines to minimize visual and noise pollution; as an example, buffers may include eight foot (8') high sound walls and landscape buffering at the discretion of the planning department.

4. Final Plan: A final landscape plan shall be approved by the planning department before a building permit is issued. The final landscape plan shall be certified by a landscape architect registered in the state of Nevada or other qualified professional pursuant to Nevada Revised Statutes chapter 623A, such as, but not limited to, any person engaged in the practice of architecture who is registered, or a licensed contractor who provides his own drawings for his own construction activities. Any changes to the approved plan, which affect plant species or irrigation component coverage, must be approved by the planning department. The final landscape plan shall include the following:

a. Scale, north arrow, location of adjacent streets, property lines, easements, sidewalks, drives, paved areas, buildings, existing trees (including street trees) and any other natural or manmade site features influencing the use of the site;

b. Construction details pertinent to installation of the landscaping;

c. A note or calculation sheet with all landscape calculations relevant to the application of this section; and

d. A plant list giving the common and botanical names of plants to be used. This plant list shall be arranged in legend form with a key number assigned to each plant. On the plan, each plant shall be identified by a key number. The size of the plant, its spacing and the quantity to be used shall follow in the legend, as the following example illustrates:

EXAMPLE PLANT LIST

No.	Botanical Name	Common Name	Size	Space	Qty.
1.	Coreopsis grand flora	Coreopsis	Flat	12" o.c.	144
2.	Celtis occidentalis	Common hackberry	15 gal.	40" o.c.	9
3.	Cytissus oreacox	Warminster broom	1 gal.	3" o.c.	27
4.	Buddleia davidii	Butterfly bush/ summer lilac	5 gal.	5' o.c.	5
5.	Hedera helix	Baltic ivy	Flat	10" o.c.	72

e. Irrigation plans (at the same scale as the landscape plans) and specifications, which comply with the uniform plumbing code, ensure adequate irrigation coverage and include the following:

(1) Scale, north arrow, locations of adjacent streets, property lines, easements, sidewalks, drives, paved areas, buildings, including street trees and any other natural or manmade site features influencing the use of the site.

(2) Indication of the system point of connection and size, water pressure available and maximum demand of the system in gallons per minute.

(3) All locations of irrigation valves, controllers, hose bibs, quick coupler valves, sprinkler heads, and backflow preventers. Sprinkler location on plans shall also include pattern of sprays (i.e., full circle, half circle), psi, radius of throw and gallons per minute.

(4) Size of irrigation lines. Schedule 40 PVC is required for all pressure lines and under all paved areas. Piping must be installed a minimum of twelve inches (12") underground for non-pressure irrigation lines and eighteen inches (18") underground for constant pressure irrigation lines.

5. Minimum Coverage: The minimum portion of a site to be permanently landscaped, including required trees and parking lot landscaping standards of subsections B6 and B7 of this section, shall be:

a. C-1 general commercial: Twelve percent (12%).

b. C-2 general heavy commercial: Ten percent (10%).

c. Industrial district: Ten percent (10%).

d. Landscaping within retention or detention areas for storm water shall be counted toward compliance with this subsection.

6. Tree Requirements: Requirements for trees shall be as follows:

a. One tree shall be provided for every four hundred (400) square feet of required landscaped area.

b. Within the parking area, one tree must be planted for every fifteen (15) parking spaces or fraction thereof. These trees must be distributed throughout the parking area surface to provide shading within the parking lot. These trees shall count toward the total number of trees required above.

c. Of the required trees, one tree shall be placed every fifty (50) linear feet of street frontage.

d. Evergreen trees shall be a minimum of six feet (6') in height at time of planting. Fifty percent (50%) of deciduous trees shall be a minimum caliper of one inch (1") at time of planting and fifty percent (50%) shall be a minimum caliper of two inches (2") at time of planting.

e. Existing mature, healthy trees, as determined by the planning department, may count toward the total number of trees required above.

7. Parking Lots: Parking lot landscaping standards for all districts, except agricultural districts, shall be as follows:

a. Landscape buffers which are a minimum of ten feet (10') in width shall be provided adjacent to the public right of way on all arterial streets. In all other cases, a minimum of five feet (5') of landscaping shall be provided adjacent to public rights of way.

b. All trees located within parking lots shall be located in planting areas protected by concrete curbs. Such curbs shall be at least two and one-half feet ($2^1/_2$') from any tree.

c. Each separate landscape area shall contain a minimum area of fifty (50) square feet and shall have a minimum dimension of at least five feet (5') and shall include at least one tree, unless the planning department approves a lesser area after consideration of the shape of the lot.

d. All parking lots within or adjacent to residentially zoned or used properties shall have a minimum landscaped area of five feet (5') in width along common lot lines.

e. Low impact development (LID) designs are encouraged to minimize nonpoint source pollution to reduce runoff.

8. Ground Cover: Ground covering over the landscaped or otherwise approved area may include:

a. Decorative rock, or other inert materials, up to thirty five percent (35%) of the required landscaped area, unless the planning department approves a greater amount after consideration of the visual appearance of the site.

b. Lawn or turf, subject to the limitations in subsection B9 of this section.

c. Living ground covers other than lawn or turf must be planted in a manner such that the area designed for the ground cover is fully covered within three (3) years.

9. Water Usage: In order to reduce water consumption, all landscaping plans approved under this section must comply with the following:

a. The minimum dimension of each lawn or turf area shall be eight feet (8');

b. The maximum slope of lawn or turf areas shall be three to one (3:1);

c. In multi-family developments, lawn or turf areas shall not exceed fifty percent (50%) of the required landscape area;

d. In commercial or industrial developments, lawn or turf areas shall not exceed thirty five percent (35%) of the required landscape area;

e. An efficient water conserving irrigation system including drip, low arching and/or low gallonage heads must be used;

f. Soil must be improved by incorporating a minimum of two inches (2") of organic soil amendment into the top six inches (6") of soil, unless recommended otherwise by the soil report for the property;

g. Soil in landscape areas shall be loosened to a minimum depth of six inches (6") prior to planting;

h. Where mulches are used, they shall be a minimum of four inches (4") in depth to decrease water evaporation. Nonporous material, such as plastic sheets, shall not be placed under the mulch;

i. Nonturf areas shall emphasize low water consumptive plants.

10. Certificate Of Occupancy: The landscape plan must be implemented before the certificate of occupancy is issued, except in the event of a declared drought or during the winter season, in which case the landscaping may be delayed with a letter written to the planning department or building department indicating the reason for the delay and the expected date of installation of the landscaping.

11. Existing Buildings: When an existing building not in conformance with this section is expanded, landscaping shall be provided in accordance with subsection B5 of this section in an amount which is proportionate to such expansion as demonstrated in the following example:

Example:

Existing building = 10,000 square feet
Expansion = 1,000 square feet or 10 percent increase
Zoning: C-1; 12 percent required
0.10 x 0.12 = 0.012 or 1.2 percent of the site to be landscaped

a. Change in use of an existing building may require a review by the planning director to determine if additional buffer requirements are needed to mitigate impacts.

b. The following are exempted from compliance with this section:

(1) Building permits for interior remodel except in change of use from residential to nonresidential or single-family to multi-family;

(2) Permits, such as, but not limited to, reroofing, siding, temporary power, change of electrical service, change of furnace, mobile home setup, addition of interior electrical, fencing, on and off premises signs and encroachments;

(3) Development projects where the existing vegetation to be retained meets or exceeds the requirements of this section.

12. Maintenance:

a. All landscaped areas must be maintained, including using acceptable pruning standards. A signed copy of a maintenance agreement must be submitted to the planning department with the final landscape plan. Any damaged or dead plant must be replaced or repaired within thirty (30) days following notification by the building inspector. If the season of the year makes this repair or replacement impractical, the person responsible for landscaping shall schedule an appropriate time with the building inspector for the accomplishment of this work.

b. If the repair or replacement is not accomplished in a timely fashion as described above, the director of planning or his designee may initiate proceedings to revoke the business license or special use permit for the subject property.

c. Maintenance must include the checking of the sprinkler pattern and drip systems; weeding; fertilization; pest control; replacement of mulches, weed barrier and dead material; proper pruning; and use of proper mowing heights.

13. Inspection: Upon installation of landscaping and irrigation systems, the installer must contact the building inspector and request an inspection. The building inspector will inspect the installation and verify compliance with the approved plans before a certificate of occupancy will be issued. (Bill 2015-D, 2015: Bill 2012-F, 2012: Bill 2010-G, 2010: Bill 2005-F § 2.2, 2005)